CLAIMS

1. A method for controlling a control surface of an aircraft, which control surface is mounted on a stabilizer element of said aircraft, said control surface comprising at least two controllable control surface elements, each of said control surface elements being mounted so that it can rotate about an axis so that it can adopt any turn angle within a range of travel, in accordance with a control command, and said control surface elements being able to be controlled differentially,
wherein, for at least one particular phase of flight of the aircraft, a first of said control surface elements is controlled as a priority and generates a force on said stabilizer element which is lower than the force generated by the second control surface element for the same turn angle of said first and second control surface elements.

2. The method as claimed in claim 1,
wherein said particular phase of flight of the aircraft is a phase of flight for which the force applied to said stabilizer element is above a force threshold corresponding to a predetermined percentage of a maximum force on said stabilizer element.

3. The method as claimed in claim 1,
wherein there are defined:
- a first control mode, for which the two control surface elements are controlled identically; and
- a second control mode, for which the two control surface elements are controlled differentially,

and, throughout the flight of the aircraft, said first control mode is used except in said particular phase of flight, for which said second control mode is used.

4. The method as claimed in claim 1,

wherein a second of said control surface elements is controlled with a delay and generates a force on said stabilizer element which is higher than the force generated by a first control surface element for the same turn angle of said first and second control surface elements.

5. The method as claimed in claim 3,
wherein for a stabilizer element corresponding to a horizontal stabilizer, and a control surface comprising at least one inboard control surface element and one outboard control surface element, said second control mode is used, for which said inboard control surface element is controlled as a priority when one of the following cases A and B arises:

A/ the aircraft is centered toward the front and the control surface is turned upward;

B/ the aircraft is centered toward the rear and the following conditions are simultaneously satisfied:

a) the desired direction of turn of the control surface opposes the movement of the aircraft;

b) the absolute value of the load factor on the aircraft is above a predetermined value; and

c) the aircraft is in a clean configuration.

6. The method as claimed in claim 5,
wherein said case A arises when the following condition is also satisfied: the aircraft is in a clean configuration.

7. The method as claimed in claim 5,
wherein said case A arises when the following condition is also satisfied: the rate of travel of a control of the aircraft is greater than a predetermined value.

8. The method as claimed in claim 5,
wherein said condition a) is satisfied when the sign of the product of the vertical load factor and of the turn angle is positive.

9. The method as claimed in claim 5,
wherein said condition b) is satisfied when the vertical load factor satisfies one of the following conditions:

- it is greater than +1.5g
- it is less than -0.5g,

g being the acceleration due to gravity.

10. The method as claimed in claim 5,
wherein said condition c) is satisfied when no lift-enhancing device of the aircraft is activated.

11. The method as claimed in claim 3,
wherein, for a stabilizer element corresponding to a fin, and a control surface comprising at least one upper control surface element and one lower control surface element, said second control mode is used, for which said lower control surface element is controlled as a priority when the product $F\delta.F\beta$ is less than zero, $F\delta$ and $F\beta$ being the aerodynamic forces exerted on said fin as a result of the turning of the control surface and of the yaw, respectively.

12. The method as claimed in claim 3,
wherein, for a stabilizer element corresponding to a fin, and a control surface comprising at least one upper control surface element and one lower control surface element, said second control mode is used, for which the upper control surface element is controlled as a priority when the following two conditions are simultaneously satisfied:

- the product $F\delta.F\beta$ is greater than zero, $F\delta$ and $F\beta$ being the aerodynamic forces exerted on said fin as a result of the turning of the control surface and of the yaw, respectively; and
- the absolute value of the yaw angle is greater than a predetermined value.

13. The method as claimed in claim 1,

wherein said control surface is produced in the form of at least three controllable control surface elements and said control surface elements are controlled in priority groups, each of said priority groups comprising, in each instance, at least one control surface element.

14. The method as claimed in claim 1,
wherein filtering is applied to the control commands for said control surface elements, and different filtering is applied to the respective control commands for said various control surface elements.

15. A system for electrically controlling an aircraft control surface, comprising:

- a control unit which comprises at least one control able to be actuated by a pilot and which delivers an overall turn command representing at least the action exerted by the pilot on said control; and
- an actuator which moves said control surface according to a turn command received, said control surface comprising at least two control surface elements, each of said control surface elements being mounted to rotate about an axis so as to be able to adopt any turn angle within a range of travel;

wherein:

- said actuator comprises at least two actuating means, each of said actuating means being associated with one of said control surface elements and being able to move said associated control surface element according to an individual turn command received; and
- said system additionally comprises:
  - first means for determining a particular phase of flight of the aircraft; and
  - second means which are arranged between said control unit and said actuating means and

which, when said particular phase of flight is determined by said first means, generate, according to the overall turn command received from the control unit, differentiated individual turn commands for said actuating means.

16. The system as claimed in claim 15, wherein said first means comprise sensors for measuring the values of various parameters and a calculation unit for determining said particular phase of flight from the values measured by said sensors.

17. An aircraft, that comprises a control system like the one specified in claim 15.